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NOTES ON GEOGRAPHIC DISTRIBUTION

New records and geographic distribution map of *Elachistocleis magnus* Toledo, 2010 (Anura: Microhylidae)

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ABSTRACT: New locality records and distribution map for the recently described *Elachistocleis magnus* are here presented. Originally described from Rondônia state, western Brazil (Amazonia), *E. magnus* was until now recorded for only two additional localities in the same state. The new records presented herein, which considerably enlarge the known range of the species, include three additional Brazilian states – Amazonas, Pará, and Mato Grosso (including records in the Brazilian Cerrado). We provide color description of the species in life, and discuss variation in habitats used by this species.

Elachistocleis magnus was recently described based on preserved material only (four males and four females), from Fazenda Jaburi, Espigão do Oeste municipality, state of Rondônia, Brazil (Toledo 2010). It is also known from two other additional localities in the same state: Costa Marques and Pimenteiras do Oeste, both mentioned by Caramaschi (2010) after reviewing material of *Elachistocleis* deposited in 13 zoological collections.

Elachistocleis magnus differs from all other congenerics mainly by its larger size: snout vent length larger than 31 mm in adults of both sexes, according to the original description by Toledo (2010), and up to 51 mm in females from Manicoré (Amazonas) and Porto Estrela (Mato Grosso). All individuals present a large post-commissural gland, and grayish dorsum and ventral coloration in preserved individuals (but see below description of live material from Manicoré). Most specimens also present large cream blotches, especially, in the axils and groins, on the flanks, as well as on the dorsal surface of the feet (Toledo 2010).

Live specimens of *E. magnus* from Manicoré had a dark grey back (in one female, with a whitish vertebral line from tip of snout to some distance before the vent), with orange spots in axils, inguinal region, and on the posterior aspect of thighs and tibiae. On the back of the thighs, instead of orange spots, there can be an oblique orange stripe, with or without dorsal and ventral projections, starting as a narrow line near the vent and ending much wider in the hollow of the knee. In males the throat has a black area. The belly shows a variable amount of yellow, from black with small yellow spots to yellow with some black spots and lines. Most of the above mentioned features can be observed in Figure 1, which shows both live and preserved specimens of *E. magnus* from Mato Grosso.

Males of *E. magnus* were reported to call in temporary ponds amidst pasture areas during the wet season (Bernarde 2007). The type-locality of the species is situated at the southern limit of Amazonia, a region where natural habitats are presently under strong anthropogenic pressure, mainly due to habitat destruction for livestock (pastures), agriculture, and hydroelectric impoundments (Toledo 2010). Costa Marques and Pimenteiras do Oeste are situated in a transitional area between southern Amazonia and the savanna-like Cerrado vegetation that covers most of Central Brazil. Brandão (2002) recorded *E. magnus* (as *Elachistocleis* sp.) calling in altered areas in the locality Pedras Negras, state of Rondônia. This locality is located about 150 km southeast of Costa Marques, on the right bank of the Rio Guaporé.

While examining specimens of *Elachistocleis* obtained in several localities in Mato Grosso, southern Amazonia and southeastern Pará, we found additional material of *E. magnus*. Based on it, we here present new localities and new state records for the species. A distribution map (Figure 2), comments, and photographs of their breeding habitats are also provided. Voucher specimens used in the present study are deposited in the zoological collection "Coleção de Vertebrados da Universidade Federal de Mato Grosso" (UFMT, Cuiabá, Mato Grosso, Brazil) and Museu Paraense Emilio Goeldi/Zoologia (MPEG, Belém, Pará, Brazil). Collecting permit for Estação Ecológica de Serra das Araras was provided by IBAMA/SISBIO (number 19518-1). Material in Manicoré (Amazonas) was collected during a joint expedition (Projeto de Conservação e Utilização Sustentável da Diversidade Biológica Brasileira - PROBIO) of Museu Paraense Emilio Goeldi and Universidade Federal

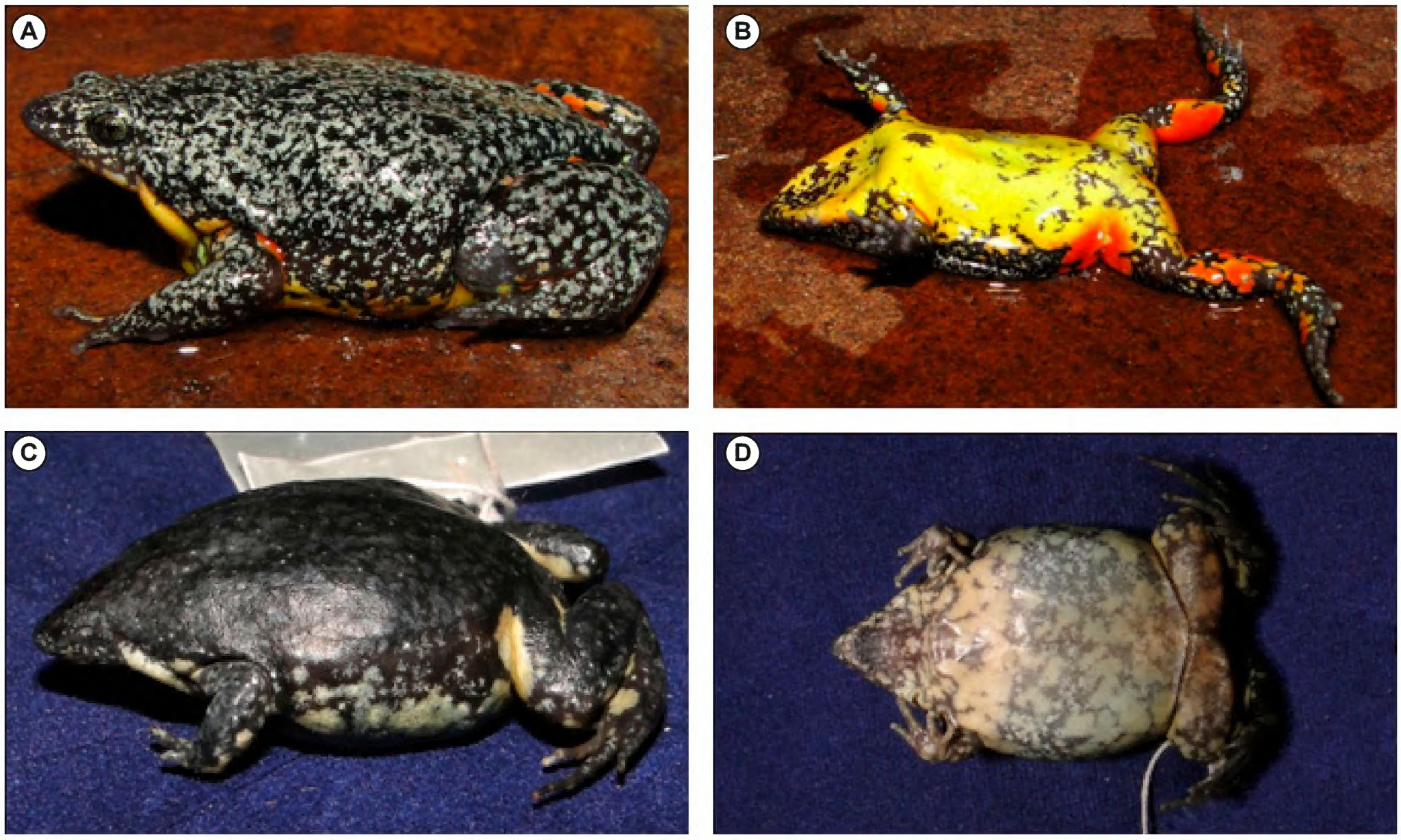

Figure 1. *Elachistocleis magnus* from Mato Grosso, Brazil: (A) dorsolateral and (B) ventral color pattern of a live adult specimen (UFMT 11993; female; SVL 42.4 mm, body mass 9.5 g) collected in February 2010 at Estação Ecológica Serra das Araras, Porto Estrela (photos by R. Valadão); (C) dorsolateral and (D) ventral color pattern of a preserved specimen (UFMT 11996) collected in December 2010 at Rio Tapaiuna, Nova Canaã do Norte (photos by V. Campos).

do Pará to the region of the Rio Marmelos, in 2004.

In the state of Mato Grosso, specimens of *E. magnus* were collected in the following localities: Pequena Central Hidrelétrica Jonas Pinheiro, municipality Santo Antônio do Leverger (UFMT 6716; 16°28'57" S, 55°26'11"W); Estação Ecológica Serra das Araras, municipality Porto Estrela (UFMT 11991-11994; 15°38'43" S; 57°12'48" W); Parque Nacional da Chapada dos Guimarães, municipality Cuiabá (UFMT 8156; 15°19'12" S, 55°52'18" W); Aproveitamento Múltiplo de Manso (APM Manso), municipality Chapada dos Guimarães (UFMT 1652, 1655, 1660, 1661; 14°58'18" S, 55°52'39" W); Pequena Central Hidrelétrica Agro Rio Von den Steinen (ARS), municipality Nova Ubiratã (UFMT 8882, 8890; 13°05'57" S, 54°49'08" W); Rio Tapaiuna, municipality Nova Canaã do Norte (UFMT 11995-11997; 10°40'59" S, 56°04'48" W).

In Pará, *E. magnus* was collected at "Mina de Ferro Carajás N1" (Serra Norte), municipality Parauapebas (UFMT 0680; 06°05'18" S, 50°09'02" W), approximately 1,300 km northeast of the type locality, in Rondônia.

In Amazonas, specimens were collected in several localities along the "Rodovia do Estanho", Rio Marmelos, municipality Manicoré, at an altitude of 120 m (MPEG 17239-17246: 08°31'58" S, 61°28'27"W; MPEG 17247-17248, 17251-17256: 08°31'10" S, 61°29'22" W; MPEG 17257: 08°32'08" S, 61°27'33" W; MPEG 17296-17303: 08°33'14" S, 61°26'43"W; MPEG 17333: 08°46'56" S, 61°24'40"W; MPEG 17387: 08°40'42" S, 61°24'34" W).

In most of the localities in the state of Mato Grosso from where habitat information is available, *E. magnus* was collected in wet open habitats adjacent to gallery forest or in the gallery forest properly. At Estação Ecológica Serra das Araras, five adult males and 34 adult females were recorded following pitfall sampling efforts that totaled 6,820 bucket-nights, between April 2009 and June 2010. All captures occurred during the rainy season (from

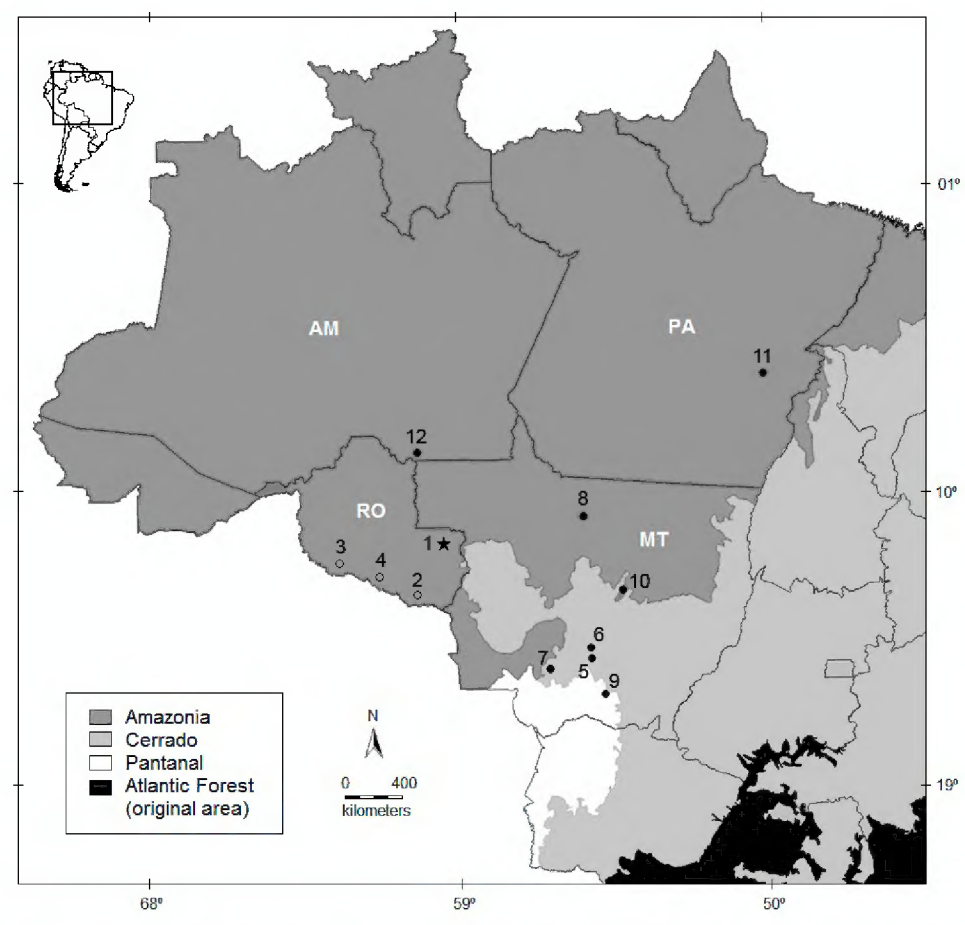

Figure 2. Known distribution of Elachistocleis magnus in the Brazilian states of Amazonas (AM), Mato Grosso (MT), Pará (PA), and Rondônia (RO). Star – type-locality, from Toledo (2010): Espigão do Oeste (1); open circles – literature records: Pimenteiras do Oeste (2) and Costa Marques (3), both from Caramaschi (2010), and Pedras Negras (4), from Brandão (2002); closed circles – new records (from the present report): Cuiabá (5), Chapada dos Guimarães (6), Porto Estrela (7), Nova Canaã do Norte (8), Santo Antônio do Leverger (9), Nova Ubiratã (10), Parauapebas (11), and Manicoré (12).

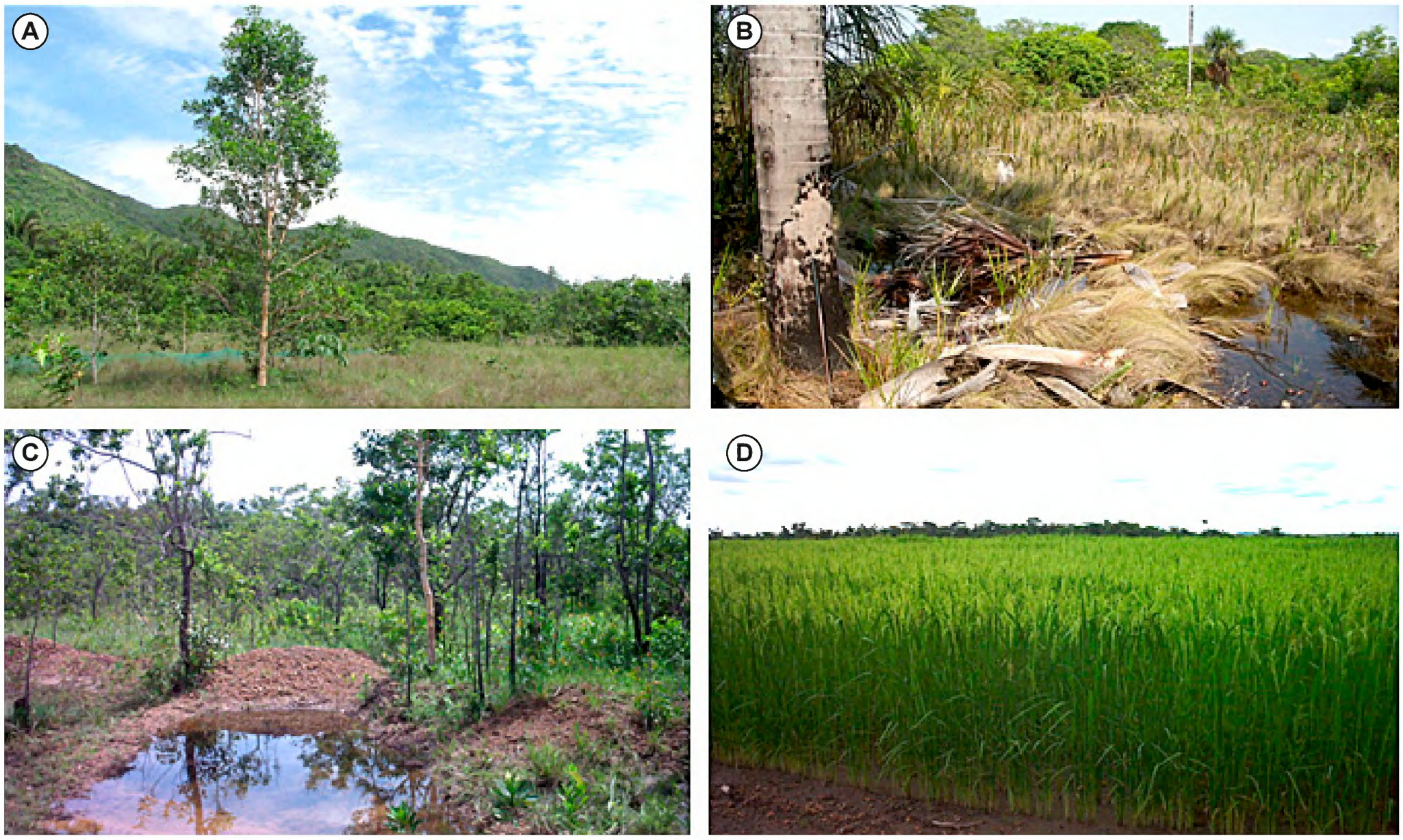

Figure 3. Breeding habitats of *Elachistocleis magnus*: (A) seasonally wet field at Estação Ecológica Serra das Araras, Porto Estrela, Mato Grosso (photo by R. Valadão); (B) seasonally wet field at Rio Claro, Parque Nacional da Chapada dos Guimarães, Cuiabá, Mato Grosso (photo by C. Strüssmann); (C) temporary roadside pond at Rio Marmelos, Manicoré, Amazonas, in the limits of (D) rice fields established in areas originally covered by Cerrado (photos by M. Hoogmoed). In natural areas, such as those in (A) and (B), note the abrupt contact between seasonally wet field (where individuals of the species reproduce), and the adjacent gallery forest.

February to March), in an open enclave of hyperseasonal savanna [treated as "parque de cerrado" in BRASIL (1982), and locally known as "campo úmido", meaning wet field; Figure 3A], surrounded by semidecidual forest and gallery forest of the right margin of Rio Camarinha. At this site, *E. magnus* was found in syntopy with another, still unnamed and locally more abundant (3:1) species of *Elachistocleis* (juveniles of both species might have been misidentified).

At APM Manso, four individuals of *E. magnus* were also collected in pitfalls installed in a seasonally wet field adjacent to the gallery forest of a spring amidst a Cerrado matrix, in October 2008, March and November 2009. At Parque Nacional da Chapada dos Guimarães, a single specimen was collected (although several males were heard calling) in a small, seasonally flooded open area adjacent to the gallery forest of the Rio Claro, in March 2006 (Figure 3B).

At Rio Tapaiuna, at the southern limit of Amazonia, individuals of *E. magnus* were collected opportunistically during the rainy season (December 2010), in the gallery forest of the river. This locality is situated in a region dominated by vegetation types associated with Tropical Dry Forest. At Carajás, northeastern state of Pará, the single specimen was collected near the margin of a lake in the middle of an area with iron-mineralized lateritic cover (locally known as "canga"). This naturally open area, not far from excavations of the largest open air iron mine in the world, is scarcely covered by savanna vegetation, in abrupt contrast with the surrounding tropical rain forest.

At Rio Marmelos, municipality Manicoré, southern state of Amazonas, *E. magnus* was collected breeding and calling in shallow, temporary roadside ponds in an Amazonian savanna enclave recently turned into dry rice fields (no standing water at the surface of the rice fields; Figures 3C-D). There was no relation with gallery forest as reported in other areas, but remaining areas of Cerrado generally were close by. The species also was encountered in "campo limpo" and in secondary forest. Due to the high water table in the entire area it was not possible to install pitfall traps anywhere in the region. All specimens were collected opportunistically at night from 12-25 January 2004 (rainy season). In Manicoré, *E. magnus* was sympatric with another species of *Elachistocleis* that has not yet been identified to species level (MPEG 17249-17250), but which clearly differs in size (much smaller), in pattern (narrow, well defined, pale orange stripe on back of thighs) and in not having a post-commissural gland.

Based on our new data it seems possible to state that *E. magnus* is a species occurring in isolated, open wet areas surrounded by Amazonian forest in southwestern Amazonia (southern part of the state of Amazonas, southeastern part of the state of Pará, state of Rondônia, northern part of the state of Mato Grosso), and enters Cerrado and Pantanal further south in the state of Mato Grosso). It seems to survive well in anthropogenically altered habitats (pastures and surroundings of cities). Records herein reported considerably enlarge the known range of *E. magnus*, with Serra Norte, Carajás (municipality Parauapebas, state of Pará) presently representing the northern- and easternmost known record for the species. To the west the species reaches Costa Marques, Rondônia, and to the south Santo Antônio do Leverger, Mato Grosso.

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